

Application No. 09/818272
Page 2

Amendment
Attorney Docket No. E16.2H-9670-US02

Amendments To The Claims:

1. (Currently amended) A cooling water system having a condensing water loop, comprising:
 - a condenser system;
 - a cooling tower having water sides surfaces and a basin; and
 - a water treatment apparatus comprising:
 - a pump having:
 - an inlet port and an outlet port, said inlet port being connected to an incoming water line for supply water to be treated, drawn from the condensing water loop of the cooling water system;
 - a first electrode ionization chamber comprising:
 - an inlet port and an outlet port, said pump outlet port communicating with said first electrode ionization chamber inlet port; and
 - two ion-producing electrodes spaced apart, wherein at least one of said ion-producing electrodes comprises a titanium electrode coated with ruthenium; and
 - a second electrode chamber comprising:
 - two ion-producing electrodes spaced apart; and
 - an inlet port and an outlet port; and
 - a quantity of water to be treated, the quantity of water to be treated being located in the condensing water loop between the cooling tower and the water treatment apparatus, wherein the quantity of water has an overall basic pH,
 - wherein the electrode chambers communicate with the condensing water loop such that water in the loop is circulated through the electrode chambers.
2. (Original) A system according to claim 2, wherein at least one of the two electrodes of the second chamber comprises a solid copper bar.
 3. (Original) A system according to Claim 1, wherein the water treatment apparatus further comprises an automatic backwashing multimedia sediment filter, the filter having an inlet port and an outlet port, said pump outlet port being connected to said filter inlet port and said filter

Application No. 09/818272
Page 3

Amendment
Attorney Docket No. E16.2H-9670-US02

outlet port being connected to said first electrode ionization chamber inlet port.

4. (Previously presented) A system according to Claim 3, wherein said first electrode ionization chamber outlet port is connected to said second electrode chamber inlet port, wherein the outlet port of said second electrode chamber is connected to the condensing water loop to enable water discharged from the apparatus to be dispersed uniformly and completely over the water side surfaces of the cooling tower.

5. (Original) A system according to Claim 1, further comprising a water pickup pipe located in the cooling tower basin and connected to the inlet port of the skid mounted pump.

6. (Original) A system according to Claim 3, with the cooling tower further comprising a spray dispersal system connected to at least one of the electrode chambers so that water which exits the water treatment apparatus can be dispersed uniformly and completely over the water side surfaces of the cooling tower.

7. (Original) A system according to claim 6, wherein the spray dispersal system is connected to the first electrode chamber.

8. (Original) A system according to claim 7, further comprising a make-up water source, the make-up source being connected to the second electrode chamber inlet.

9. (Currently amended) A water system, comprising:

a water treatment apparatus comprising:

a first ionization chamber comprising:

two ion-producing electrodes spaced apart, at least one electrode

comprising a titanium electrode coated with ruthenium; and

an inlet port and an outlet port, said inlet port being capable of being connected to an incoming water line for supplying make-up water to be treated by said chamber, and

a quantity of water to be treated, the quantity of water to be treated being located in the water system, the water system being designed to pump the quantity of water into the water treatment apparatus, ~~wherein the quantity of water has an overall basic pH.~~

10. (Original) A system according to Claim 9, said water treatment apparatus further comprising:

Application No. 09/818272
Page 4

Amendment
Attorney Docket No. E16.2H-9670-US02

a pump having an inlet port and an outlet port, said inlet port being connected to an incoming water line for supplying water to be treated by said apparatus from a condensing water loop of a cooling water system having a condenser and a cooling tower having a basin and water side surfaces;

an automatic backwashing multimedia filter having an inlet and an outlet port, wherein the pump outlet port is connected to the inlet port of the automatic backwashing multimedia filter;

a second ionization chamber comprising:

two ion-producing electrodes spaced apart, at least one electrode being comprised of solid copper;

an inlet port and an outlet port, the outlet port of said filter being connected to the inlet port of the second ionization chamber and the outlet port of said ionization chamber being connected to a condensing water loop for dispersal of the treated water completely and uniformly over the water side surfaces of a cooling tower.

11. (Original) A system according to Claim 9, the water treatment apparatus further including a skid mounted pump and an automatic backwashing filter and an ozonator, wherein the water from a condensing water loop is treated by passing it through the filter, the ozonator and the ionization chamber.

12. (Original) A water treatment system according to Claim 11, further including a cooling tower deck water dispersal system constructed and arranged to reintroduce the treated water into the water loop by dispersing it down the sides of the cooling tower.

13. (Withdrawn) A method of treating and cooling water in a cooling water system having a condensing water loop, comprising:

pumping water through a condensing water loop;

cooling the water;

drawing a portion of the water from the loop into a water treatment apparatus, the water treatment apparatus comprising:

an inlet port and an outlet port, said inlet port being connected to an incoming water line for supply water to be

Application No. 09/818272
Page 5

Amendment
Attorney Docket No. E16.2H-9670-US02

treated, drawn from the condensing water loop of the cooling water system;

a first electrode ionization chamber comprising an inlet port and an outlet port, said inlet port communicating with said first electrode chamber inlet, and two ion-producing electrodes spaced apart, wherein at least one of said ion-producing electrodes comprising a titanium electrode coated with ruthenium; and

a second electrode chamber comprising two ion-producing electrodes spaced apart, wherein at least one of which comprises a solid copper bar and an inlet port and an outlet port;

oxidizing the water by passing the portion of water through the first electrode ionization chamber, wherein one electrode acts as an original anode and the second electrode acts as an original cathode, the electrodes also being positioned in the same chamber so that the water is passed over each of the electrodes, either in sequence or substantially simultaneously;

ionizing the water by passing the water through the second electrode ionization chamber wherein one electrode acts as an original anode and the second electrode acts as an original cathode, the electrodes also being positioned in the same chamber so that the water is passed over each of the electrodes, either in sequence or substantially simultaneously; and

returning the water to the cooling loop.

14. (Withdrawn) The method of claim 13, further comprising the step of filtering the portion of water through a multimedia filter constructed and arranged within the water treatment apparatus prior to oxidizing the water.

15. (Withdrawn) The method of claim 14, further comprising the step of introducing make-up water into the second ionization chamber for ionization and thereafter reintroducing the water into the cooling tower.

16. (Withdrawn) A method of treating water, comprising the steps of:

Application No. 09/818272
Page 6

Amendment
Attorney Docket No. E16.2H-9670-US02

supplying water; and
oxidizing the water utilizing a titanium electrode coated with ruthenium.
ionizing the water using copper electrodes, the ionization sanitizing the water and
providing residual copper ions which act as an algicide and a biocide;
providing the ionized oxidized drinking water which retains calcium in solution to the
animal for drinking.

17. (Withdrawn) The method of claim 16, further comprising the steps of:
ionizing the water using at least one copper electrode, the ionization sanitizing the water
and providing residual copper ions which act as an algicide and a biocide.
18. (Withdrawn) The method of claim 16, wherein the oxidizing step retains calcium in the
water solution, the method further comprising the step of supplying water to a water feed line
which is connected to a drinking device.
19. (Withdrawn) The method of claim 16 further including the steps of:
precipitating metals out of the water after oxidation, and
filtering out the precipitated metals from the water prior to ionization.
20. (Withdrawn) The method of claim 18 further including the step of dissolving calcium
into solution from scale deposits.
21. (Withdrawn) The method of claim 18 further including the step of the poultry ingesting
the water retaining calcium in solution, which results in greater egg shell hardness.
22. (Withdrawn) The method of claim 17 wherein the at least one copper electrode also
include zinc, which supply zinc ions to the water, which are then absorbed into the animal
ingesting the water.
23. (Withdrawn) The method of claim 22 wherein the zinc ions absorbed into an animal and
are incorporated into the eggshell, where they act to kill bacteria.
24. (Withdrawn) The method of claim 20 further including the step of using the ionized
oxidized water in a processing plant water system to prevent scale formation and dissolve
existing scale, as well as kill algae, bacteria and fungus.
25. (Withdrawn) The method of claim 17 further including the step of using the ionized
oxidized water in a evaporative cooling water system to prevent scale formation and dissolve
existing scale, as well as kill algae, bacteria and fungus.

Application No. 09/818272
Page 7

Amendment
Attorney Docket No. E16.2H-9670-US02

26. (Currently amended) An evaporative cooling system of the type blowing air over a wet surface, the improvement comprising:

oxidation apparatus for oxidizing water prior to supplying the water to the evaporative cooling system, wherein the oxidation apparatus utilizes a titanium electrode coated with ruthenium,

ionization apparatus for ionizing the water with copper ions prior to supplying the water to the evaporative cooling system,

a quantity of water to be treated, the quantity of water to be treated being located in the evaporation cooling system between the wet surface and the oxidation apparatus and the ionization apparatus, ~~wherein the quantity of water has an overall basic pH,~~ and

a means for pump the quantity of water into the the oxidation apparatus and the ionization apparatus,

wherein the oxidation apparatus and the ionization apparatus, when the quantity of water is pumped through the oxidation apparatus and the ionization apparatus, does not produce chlorine in the quacity of water.

27. (Original) The evaporative cooling system of claim 26 for use in connection with a contained environment used to raise animals.

28. (Original) The evaporative cooling system of claim 27 for use in connection with pullet houses.

29. (Original) The evaporative cooling system of claim 27 for use in connection with layer houses.

30. (Currently amended) The system according to claim 1, wherein the quantity of water comprises ~~a high level of~~ metals and minerals.

31. (Currently amended) The system according to claim 1, wherein the water treatment apparatus, when the quantity of water is pumped through the water treatment apparatus, does not produce ~~any significant amount of~~ chlorine in the quacity of water.

32. (Currently amended) The system according to claim 9, wherein the quantity of water comprises ~~a high level of~~ metals and minerals.

33. (Currently amended) The system according to claim 9, wherein the water treatment apparatus, when the quantity of water is pumped through the water treatment apparatus, does not

Application No. 09/818272
Page 8

Amendment
Attorney Docket No. E16.2H-9670-US02

produce ~~any significant amount of~~ chlorine in the quantity of water.